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ABSTRACT

This research study delineates some of the factors in classroom communication involved in the process of classroom interaction in the elementary schools and explores the psychological relevance of some matters brought up in ordinary language philosophy and modern linguistics. Samples of classroom speech were collected from twenty grade school teachers, five from each of four grade levels (kindergarten, first, fourth, and fifth). Interviews with an adult interviewer were also collected from the same sample of teachers. The data were analyzed by a coding procedure based on several theoretical criteria, such as Feldman and Hass's theory of underdeterminacy and other categories based on other theoretical areas in linguistics and language philosophy. The total analysis was aimed at examining some of the important parameters of human verbal communication that change with different speaker-hearer matrices. Preliminary analysis of the data indicates significant differences between classroom and adult interview uses of the elements in the categories originally hypothesized. Grade-level differences were not in evidence. This difference in the level of use of specified language elements (i.e., "code switching") is a phenomenon that indicates shifts in relatively subtle aspects of human communication may occur when the speaker is confronted with varying speaker-hearer matrices. The evidence collected thus far does not provide an explanation of the teachers' motivation for code-switching. Although it is generally considered prudent to speak more simply to young students, further investigation is needed to analyze the true abilities of these young listeners. (Author/CFM)

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ANALYSIS OF SYNTACTIC AND SEMANTIC ELEMENTS FOUND IN THE CLASSROOM SPEECH OF TEACHERS

Project I. D. # 4BOG14-2

Carol Feldman

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Samples of classroom speech have been collected from twenty grade school teachers - five from each of four grade levels (kindergarten, first, fourth, and fifth). Interviews with an adult interviewer were also collected from the same sample of teachers. Four ten-minute segments - two from classroom interaction and two from the interview - were randomly selected and transcribed. Approximately 240 pages of transcribed speech was available for analysis.

We analyzed the data by a coding procedure based on several theoretical criteria. One category is based on Feldman and Hass's theory of underdeterminacy. Other categories are based on other theoretical areas in linguistics and language philosophy. The total analysis was aimed at examining some of the important parameters of human verbal communication that change with different speaker-hearer matrices. That is we wanted to look at some of the aspects of teachers' classroom language as opposed to speech directed toward an adult.

Preliminary analysis of the data indicates significant differences between classroom and adult interview uses of the elements in the categories originally hypothesized. Grade-level differences were not in evidence. This difference in the level of use of specified language elements (i.e. 'code switching') is a phenomenon that indicates shifts in relatively subtle aspects of human communication may occur when the speaker is confronted with varying speaker-hearer matrices. It has especially interesting implications for classroom interaction analysis. The evidence collected thus far does not allow us to examine the teachers' motivation for code-switching. Although it is generally considered prudent to speak more simply to young students, further investigation is needed to analyze the true abilities of these young listeners.

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FINAL REPORT

ANALYSIS OF SYNTACTIC AND SEMANTIC ELEMENTS FOUND IN THE CLASSROOM SPEECH OF TEACHERS

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Introduction

This research effort was directed toward two main goals. First of all, we wished to delineate some of the factors in classroom communication which are involved in the very complex and little-understood process of classroom interaction in the elementary schools. Secondly, we wished to explore the psychological relevance of some matters brought up in ordinary language philosophy and modern linguistics. Of course these two goals are not mutually exclusive. As shall be noted later in this report, insight into factors affecting one will affect our understanding of the other. The elementary school classroom provided an ideal testing ground for analyzing human communication under a specific set of circumstances.

For this phase of our research, we chose naturalistic observational data. We opted to use naturalistic observation for our data collection for two main reasons. First of all, the very nature of the phenomena we were examining has been shown to change in the absence of a speaker-hearer matrix composed of live people functioning together. For example, Feldman (1968) found a difference between recall of sentences containing underdetermined elements heard from a live, present speaker and those heard on a tape recorder. From such results, one must wonder if other artificial conditions would not also change the outcome. For example, a much greater degree of control could have

been exercised over the content areas of the teachers' speech if we had aksed them to record (in the absence of listeners) explanations of some topic or task and told the teachers the recordings were to be used for students at a later time. However, in this example, Feldman's findings suggest that more than the topic of such speech would have been changed. In the absence of a live speaker-hearer matrix, it would be reasonable to hypothesize a change in specific language mechanisms, such as under-determined elements, as well. The speaker-hearer matrix seems to play an essential role in the use and understanding of elements other than those primarily involved in conveying the central propositional meaning of a sentence.

A second reason for utilizing naturalistic observation is not grounded in the specific material we examined in this study. It is based on a desire to understand more of what goes on in "real life" rather than in the limited environment of psychology laboratory. Herbert Wright, one of the leading proponents of naturalistic observation, has put it this way (Wright, 1967, pp. 1-2):

> The first psychological scientists worked in laboratories where, as new practitioners of the experimental method, they created special environments for their subjects. The experimenter supplied and arranged exterior conditions to suit his problem and then recorded the behavioral effects of these conditions. Until today, moreover, this model of manipulative control over the environmental determinants of behavior has largely ruled the scope as well as the procedures os psychological research (cf. Barker, 1965). Psychologists have not often ventured as scientists into naturally occurring environments. They have not often sought to record and examine the characteristics and the behavioral effects of exterior conditions that nature and society create. In short, for whatever reasons, which are here to be left to the sociology of science, psychology lacks a developed ecology of human behavior.

Wright goes on to point out that besides not being able to tell us

what aspects of the natural environment influence human behavior, laboratory experimentation adds little to our knowledge of the type and frequency of incidence of naturally occurring events (Wright, 1967, p. 3):

> Even the predominantly experimental sciences of physics and chemistry have amassed and regularly call upon stores of information about the incidence in nature of their materials and subject processes. Psychology appears to stand alone as a science without a substantial descriptive, naturalistic, ecological side.

In other words, we see two main reasons for gathering data from a naturalistic setting. First of all, some of the phenomena we wish to examine may be present only in such circumstances. Secondly, we are interested in beginning to outline some of the broad features of a picture of what normal classroom teacher speech looks like. This "charting" aspect of our project can hopefully serve to instigate new ideas for research as well as to provide more information about basic parameters of classroom interaction.

Within the broad confines of naturalistic observation, classroom observation has been used relatively extensively. The need for information about the behavior of teachers in classrooms arose quite naturally out of supervisors' desire to replace subjective judgments of performance with some type of objective measures. The first studies about this topic appeared in the literature shortly after the turn of the twentieth century (e.g. Horn, 1914). Many different systems have been devised and tested through the years, but the most widely used one in recent years is that of Ned Flanders (1970). His coding instrument is based on ten categories of classroom (both teacher and student) behavior. An observer codes the content of succeeding three-second intervals

according to one of the ten categories. The analysis of this data indicates what proportions of time are spent in various activities indicated by the categories and what kind of transition behaviors occur (i.e. what categories of behavior follow others). Flanders built his coding system on the basis of what he felt to be important variables in analyzing classroom interaction. He has had some success in correlating ratings on his instrument with student variables such as measures of achievement.

We see such research efforts to be an important part in discovering and delineating the underlying processes of classroom interaction rather than a basis for making evaluations of teachers. They may serve this purpose sometime in the future, but it seems to us that present efforts in the area should be more concerend with understanding the extremely complex nature of classroom interaction than with the task of judging the effectiveness of individual teachers. Medley and Mitzel (1963) point out that many observational studies have been efforts at evaluation based on values of the observer (p. 257):

> Most classroom visitors go to the classroom with definite preconceptions of what they are looking for. They go to the classroom not to find out what effective teacher behavior is, but to see whether the teacher is behaving effectively...i.e., the way they believe he should behave.

They go on to evaluate the results of a large number of these studies by saying (p. 257), "A reading of these studies reveals uniformly negative results." This conclusion by researchers so thoroughly familiar with the field led us to realize that our primary goal in studying an aspect of classroom interadtion should be to try to understand what is transpiring rather than to evaluate it.

Flanders' instrument has been useful for delineating some of the broad parameters of classroom interaction. However, it is only a be-

ginning and has many weaknesses as he himself points out. One of the primary limitations he finds in his instrument is that (1970, p. 423), "the coding of classroom verbal communication provides a relatively gross description of a small portion of classroom interaction. Most of what takes place is ignored and events are counted in terms of relatively broad categories." His instrument include broad categories such as 'Lecture' by the teacher and 'Questions' asked by the teacher. Within such categories a wide range of variation is obviously possible. Flanders recognized this point, but argued that it could be construed both as a weakness and as a strength. By using such broad categories, one obviously surrenders some analytic power, but by keeping the number of categories to a minimum, the instrument became readily available to many people without the need for prolonged and expensive training.

The approach we followed in our study is similar to the type of analysis Flanders has conducted. We have examined the use and frequency of appearance of several classes of words which were chosen because of the role they play in various theories of meaning. For example, we looked at the use of specific senses of "even" and "just" which Feldman(1968) has included in her class or underdetermined elements. This may appear to be similar in principle to Flanders' scoring procedure. However, we then have taken the additional step of exploring how the words convey meaning based on theories of meaning. Researchers like Medley and Mitzel (1963) and Flanders (1970) have been primarily interested in describing events and then correlating them with some other outcomes - usually some measure of pupil growth. There is little doubt that this will provide fruitful results in some cases, but it seems to us wise to investigate the intervening reasons for such an interaction. Therefore, rather than just describing what a teacher does, we have also made an

attempt at explaining it. After many years of limiting itself to simple and supposedly objective dexcriptions of events and correlated consequences, psychology is again beginning to demand explanatory as well as dexcriptive adequacy.

Chomsky (1972) has utilized such an approach with a great deal of success. In explaining his position in linguistics he said (p. 13): "There is surely nothing illegitimate in an attempt to go beyond elaboration of observational tests and collection of evidence to the construction of some theoretical explanation for what is observed, and this is just what was at stake in the Cartesian approach to the problem of mind." In our own study, this approach led us to realize that, in principle, a straightforward elaboration of Flanders' technique would not serve as an explanation of what is happening in a classroom between the teacher and students. Instead of just describing the events, we felt we needed to use the data we gathered to begin building a theoretical framework which would provide an integrated explanation for them as well.

Subjects and Method

Five teachers from each of kindergarten, first, fourth, and fifth grade levels served as subjects. All the teachers were female with at least one year's experience and taught in middle class suburban schools. The number of years experience ranged from one to twenty-five (see Table I) While we recognize the need for studying a variety of types of teachers in a variety of teaching environments, our primary concern was with outlining the basic parameters of classroom codes rather than examining the correlates of demographic differences such as socioeconomic status and

Table 1.

Teacher Experience Table

Grade level	Teacher #(within grade level)	No. years experience
K	1	17
K	2	14
K	3	13
K	4	1
K	5	12
1	1	4
1	2	1
1	3	3
1	4	25
1	5	5
4	1	14
4	2	2
4	3	2
4	4	1
4	5	1
5	1	12
5	2	13
5	3	16
5	4	16
5	5	7

sex. All of the subjects agreed to participate in the experiment.

A written explanation of our goals and requirements was provided for the teachers before they were asked to participate (see Attachment 1.). This explanation included the suggestion that teachers explain to their students what was taking place during, the data-collection procedure. Most of the teachers that were asked to participate in the study readily agreed. In an effort to minimize unwanted temporal influences on the speech of teachers, samples of speech were collected during mornings in every case except two where it was infeasible - one kindergarten teacher and one fourth-grade teacher. We recorded all of a teacher's speech from the time school started in the morning until the class was dismissed for lunch - about three hours' worth. With the exception of the time that the teacher was out of the classroom for recess, art, music or other activities. The speech directed toward an adult was gathered in an interview situation. Although no set of standard questions was used, the interviewer tried to direct the conversation toward topics covering the curriculum that was being followed in the teacher's classroom. In all but two instances interviews were held during the same half-day during which the classroom interaction speech was collected. In the remaining two cases, the interview was conducted on the following day. All of the interviews were conducted either in the teacher's empty classroom or immediately outside it and lasted approximately one half hour.

The classroom interaction speech was collected with the aid of an FM radio transmitter sewn into an apron worn by the teacher. The transmissions from this device were received and recorded either somewhere in the classroom in which the teacher was working or else in an adjoining room. The use of this equipment proved necessary to collect tape re-

cordings of a high enough quality to be accurately transcribed. The interview was recorded with the same equipment or directly by a tape recorder. All interviews were conducted by the same adult male interviewer.

Transcriptions were made of two ten-minute segments of the classroom interactions tapes and of two ten-minute segments of the interviews. These ten minute segments were selected from the same fixed portion of the tape recording for each of the twenty teachers. The transcriptions included all aspects of the speech audible on tape - including pauses, false starts, etc. Only teacher speech was actually transcribed; the speech of the other participant(s) in the interview or interaction was simply represented by a symbol indicating their identity. The various ten minute segments contained varying amounts of speech, but a minimum of four pages was transcribed both for each teacher's interview and for each teacher's classroom interaction. An average of six pages of transcription was available for each of both the teacher's interaction and interview segments of speech making approximately 240 pages of transcriptions available for analysis.

The words we used in the coding procedure are shown in Table 2, along with the specific senses and uses we considered. As a further frame of reference, two frequency counts from Thorndike and Lorge (1944) are given. The frequency listed under G is the summary frequency of four specialized frequency counts in reading material. Numbers indicate the number of occurrences per million words; an "A" indicates at least fifty but fewer than 100 occurrences; and "AA" indicates 100 or more occurrences per million. The frequency listed under J for each word represents the frequency of occurrence for the J column; an "M" means that the word

TABLE 2.

CODED ITEMS

Word	Definition(s) or Sense(s)	Word Count G	Word Count J
Even	Adverbial sense only as in"Even now he does not realize it."	AA	M
Only	Adverbial and adjectival use as in "Only he understands it."	AA	M
Still	Adverbial use only as in "He still does not realize it."	AA	M
Just	Adverbial use only as in "There are just three left."	AA	M
Will	Auxiliary verb (both epistemic and root senses)	AA	M
Shall	Auxiliary verb (both epistemic and root senses)	AA	M*
Should or Ought to	Auxiliary verb (both epistemic and root senses)	AA AA	M - should 700- ought
Must or Have to or Got to	Auxiliary verb (both epistemic and root senses) "Have to" and "got to" are used in place of "must" in some dialects of English	AA	M - must
May	Auxiliary verb (both epistemic and root senses)	AA	M
Can or Be able	Auxiliary verb (both epistemic and root senses) "be able replaces "can in many uses of the root sense of the word	AA	M
Might	Auxiliary verb (both epistemic and root senses)	AA	M
Could	Auxiliary verb (both epistemic and root senses)	AA	M
Need	Auxiliary verb	AA	M
Would	Auxiliary verb (both epistemic and root senses)	AA	M

occurred 1,000 times or more in the count of 120 juvenile books; and an M* means that based on estimation procedures, it probably did. For one word, "ought", the number was less than 1,000 and the raw frequency is reported. The transcripts of seven of the teachers (both interaction and interview) were coded once by one coder, and the remaining thirteen were coded by a second coder. The second coder also coded random segments of the first seven transcripts. Based on these segments coded by both coders the interjudge reliability was .88. In addition, the transcripts were reread in their entirety and checked by the second coder mentioned above.

Our data analysis was based on the assumption that at least one, and possibly two, requirements for the use of parametric statistics could not be met: We felt we could not justify the data's being of an interval nature (i.e. equal scale increments being of equal quantity) and the normality of population distributions. We therefore used two non-parametric tests to analyze our data. The Wilcoxan Matched-Pairs Signed Ranks Test was used to examine the difference between teachers' use of items in the classroom interaction and in the interview situation. As shown in Table 3., the use of "will", "may", "even", and "just" were found to differ significantly between these two settings. We also examined the possibility of difference in frequency of use across grade levels using the Kruskal-Wallis One-Way Analysis of Variance. No such effect showed up for any of the items. The data analyzed were frequency counts per hundred lines of transcription. The scores were so standardized to avoid frequency differences arising out of differences in the amount of speech sampled in the ten minute tape segments. The standard scores, along with the differences obtained between them are shown in Table 3. As indicated there, "will" and "may" were used

TABLE 3.

FREQUENCY OF USE-STANDARDIZED SCORES (FREQUENCY/100 LINES OF TRANSCRIPTION) AND STATISTICAL ANALYSIS

Grade	Teacher w/in grade	Condition	Even	Only	Still	Just
K	1	V	3.1	0.0	0.5	6.2
K	1	A	0.0	0.0	2.0	12.0
K	2	V	1.0	1.0	0.5	5.0
K	2	A	1.3	0.0	1.3	4.6
K	3	V	1.0	1.5	0.0	4.0
K	3	A	0.0	0.0	1.0	4.0
K	4	V	0.8	0.8	0.4	10.0
K	4	A	0.0	0.6	0.0	7.3
K	5	V	2.0	1.0	2.0	12.0
K	5	A	0.0	0.0	0.0	5.0
1	1	V	3.5	1.5	0.0	8.0
1	1	A	0.0	1.1	0.5	2.8
1	2	V	2.6	0.6	0.6	8.0
1	2	A	0.0	0.6	0.0	3.3
1	3	V	0.0	0.8	4.0	4.0
1	3	A	0.0	1.0	0.5	6.0
1	4	V	4.0	0.0	0.5	9.0
1	4	A	0.0	1.0	0.0	7.0
1	5	V	3.2	0.4	0.0	6.0
1	5	A	0.0	2.0	0.6	5.3

V = Interview with adult

A = Interaction in classroom

TABLE 3. (cont.)

Grade	Teacher w/in grade	Condition	Even	Only	Still	Just
4	1	V	1.0	1.0	1.0	9.0
4	1	A	0.0	0.0	0.0	6.6
4	2	V	2.5	1.0	1.0	7.5
4	2	A	2.0	4.0	2.0	8.0
4	3	V	0.5	2.0	0.0	10.5
4	3	A	3.0	0.0	1.0	7.0
4	4	V	1.0	0.0	0.0	11.0
4	4	A	0.0	2.0	0.0	1.0
4	5	V	1.0	1.0	0.0	5.1
4	5	A	0.0	0.0	1.0	2.0
5	1	V	0.8	1.3	3.5	7.1
5	1	A	0.0	1.1	0.5	4.0
5	2	V	0.6	1.3	0.6	6.0
5	2	A	0.0	2.4	0.0	6.5
5	3	V	0.0	2.0	2.0	7.0
5	3	A	0.0	1.0	0.0	6.0
5	4	V	0.0	1.7	1.1	8.5
5	4	A	0.0	0.5	1.1	4.5
5	5	V	2.0	2.5	0.5	4.0
5	5	A	1.0	0.5	0.0	6.0
Significance of Difference between Interview and Interaction			.01	N.S.	N.S.	.02
Direction of difference			(V>A)			(V > A)

TABLE 3. (cont.)

Grade	Teacher w/in grade	Condition	Will	Shall	Should	Must	May
K	1	V	6.2	0.0	1.5	6.2	0.5
K	1	A	13.0	0.0	0.0	2.0	3.0
K	2	V	6.5	0.0	0.0	3.0	0.5
K	2	A	2.0	0.0	0.6	2.0	0.0
K	3	V	1.0	0.0	1.5	2.5	0.5
K	3	A	20.0	0.0	0.5	2.5	0.5
K	4	V	3.5	0.0	0.8	5.1	0.0
K	4	A	10.6	0.0	2.6	5.3	3.3
K	5	V	2.0	0.0	0.5	4.0	0.5
K	5	A	7.0	0.0	1.0	4.0	0.0
1	1	V	1.0	0.0	0.5	2.0	0.0
1	1	A	6.8	0.0	1.7	1.7	1.1
1	2	V	4.0	0.0	0.0	2.0	1.3
1	2	A	4.0	0.0	7.3	7.3	3.3
1	3	V	4.0	0.0	6.4	3.2	0.0
1	3	A	3.5	0.0	0.5	7.0	1.0
1	4	V	4.5	0.0	0.5	2.5	0.0
1	4	A	10.0	0.0	1.0	1.0	1.0
1	5	V	2.0	0.0	1.2	8.3	0.0
1	5	A	8.0	0.0	1.3	4.0	2.6

TABLE 3. (cont.)

Grade	Teacher w/in grade	Condition	Will	Shall	Should	Must	May
4	1	V	6.0	0.0	0.5	3.5	0.0
4	1	A	4.0	0.0	2.0	2.6	0.0
4	2	V	10.5	0.0	0.5	6.0	0.0
4	2	A	10.0	0.0	1.0	6.0	0.0
4	3	V	3.0	0.0	0.0	0.5	0.0
4	3	A	6.0	0.0	0.0	6.0	0.0
4	4	V	3.0	0.0	0.0	2.0	0.0
4	4	A	7.0	0.0	1.0	1.0	1.0
4	5	V	1.0	0.0	0.5	2.0	0.0
4	5	A	19.0	0.0	2.0	4.0	1.0
5	1	V	5.7	0.0	2.2	4.8	0.0
5	1	A	6.8	0.0	0.0	4.0	2.8
5	2	V	8.7	0.0	2.0	4.0	0.0
5	2	A	4.0	0.0	1.6	8.1	0.0
5	3	V	6.0	0.0	0.0	3.0	1.0
5	3	A	10.0	0.0	1.0	2.0	0.0
5	4	V	7.4	0.0	1.1	3.4	0.0
5	4	A	15.4	0.0	1.1	2.8	0.0
5	5	V	3.5	0.0	2.0	2.5	0.0
5	5	A	1.5	0.0	3.5	3.5	0.0
Significance of difference between Interview and Interaction			.01	N.S.	N.S.	N.S.	.01
Direction of difference			(A > V)				(A ≥ V)

TABLE 3. (cont.)

Grade	Teacher w/in grade	Condition	Can	Might	Could	Need	Would
K	1	V	8.8	0.0	4.1	0.0	6.2
K	1	A	8.0	3.0	2.0	0.0	3.0
K	2	V	9.5	0.5	1.0	0.0	2.5
K	2	A	15.3	2.6	2.0	0.0	14.6
K	3	V	6.5	0.0	1.0	3.5	7.5
K	3	A	8.0	0.5	1.0	2.0	14.5
K	4	V	11.2	0.0	0.4	0.0	1.6
K	4	A	6.0	1.3	0.0	2.0	5.3
K	5	V	8.5	1.5	0.5	0.5	5.0
K	5	A	10.0	1.0	1.0	2.0	12.0
1	1	V	8.0	0.5	3.0	0.0	4.0
1	1	A	9.1	0.5	5.1	1.1	8.5
1	2	V	12.6	0.6	2.6	5.3	4.0
1	2	A	4.6	0.6	0.6	2.0	6.0
1	3	V	2.4	0.0	0.0	1.6	5.6
1	3	A	6.0	0.0	3.5	3.0	11.5
1	4	V	3.0	1.0	5.0	1.0	5.5
1	4	A	14.0	0.0	2.0	0.0	1.0
1	5	V	11.6	0.8	2.0	2.8	4.8
1	5	A	7.3	0.6	2.6	0.0	10.0

TABLE 3. (cont.)

Grade	Teacher w/in grade	Condition	Can	Might	Could	Need	Would
4	1	V	6.0	0.0	5.0	1.0	8.5
4	1	A	6.6	0.0	3.3	0.6	6.6
4	2	V	5.5	1.0	2.5	1.5	9.5
4	2	A	10.0	0.0	1.0	2.0	1.0
4	3	V	5.0	0.0	2.0	1.5	1.0
4	3	A	9.0	0.0	0.0	1.0	8.0
4	4	V	4.0	0.0	2.0	0.0	2.0
4	4	A	8.0	0.0	3.0	2.0	2.0
4	5	V	9.2	0.5	1.5	1.0	11.7
4	5	A	11.0	0.0	1.0	1.0	9.0
5	1	V	6.2	0.4	1.7	2.6	9.7
5	1	A	8.5	1.1	4.0	2.8	10.8
5	2	V	3.3	0.0	3.3	4.6	4.6
5	2	A	4.8	0.8	1.6	4.0	6.5
5	3	V	8.0	2.0	1.0	2.0	9.0
5	3	A	8.0	1.0	3.0	4.0	13.0
5	4	V	3.4	0.0	0.5	0.5	5.7
5	4	A	6.8	1.1	1.1	0.5	10.8
5	5	V	6.0	0.5	4.0	0.0	8.5
5	5	A	4.0	0.5	2.0	0.0	15.0
Significance of difference between Interview and Interaction			N.S.	N.S.	N.S.	N.S.	N.S.
Direction of difference							

significantly more frequently in the classroom than in the interview situation, whereas for "even" and "just" the usage was significantly greater in the interview than in the interaction situation. The theoretical analysis of these empirical results follows. As we shall see, it provides several indications of the role structures operating in the classroom. Specifically, it indicates that teachers see their classroom roles as including: a) the ability to make high-confidence predictions; b) the responsibility for making relatively strong requests of the students, and c) the need to avoid some types of evaluative statements and to focus on objective information.

Modal Verbs

Although we, like many before us who have tried to make a similar distinction, are unable to give a precise definition of where syntactic and semantic considerations stop and where pragmatic considerations begin, we can make a crude division among the three. Our main interest here is in the pragmatic aspect of language. The meaning and use of modal verbs is determined at least partially by this aspect of an utterance. For our purposes here, we will see at least the following factors involved in the pragmatic aspect of an utterance: the context of the utterance; the social status and relationship system found between the speaker and the hearer; the impressions the speaker wishes to make upon the hearer; and the assumptions shared by the speaker and the hearer (be they overtly expressed in the past or present or not). Such considerations may be thought to be more concerned with social psychological aspects of a situation than with the linguistic aspects, and indeed there is a thorough

mixture of factors involved. This growing awareness in linguistics of so-called 'nonlinguistic' factors involved in language has been pointed out recently by several linguists such as G. Lakoff (1971, p. 329):

> ...there are a great many cases where it makes no sense to speak of the well-formedness or'grammaticality' of a sentence in isolation. Instead, one must speak of relative well-formedness and/or relative grammaticality; that is, in such cases a sentence will be well formed only with respect to certain presuppositions about the nature of the world. In these cases, the presuppositions are systematically related to the form of the sentence, though they may not appear overtly.

We shall temporarily ignore Lakoff's warning in an effort to separate syntax, semantics, and pragmatics from one another. The problems we encounter in this attempt will be instructive in that a clear-cut separation will, in the end, be found to be tenuous at best. However, let us attempt to make this distinction in a effort for a basic conceptual understanding. Perhaps the best way to differentiate between syntax and semantics on the one hand and pragmatics on the other hand is to consider a sentence in isolation. For example, a sentence like "The cat is on the mat." (a long-standing favorite of language philosophers) can help us by providing instances of how syntax and semantics work. Chomsky's work (1965) has been the basis of an entire revolution in the study of syntax. His theory of transformational generative grammar will be the basis of our analysis. By violating purely syntactic rules in our example sentence, we can get sentences such as (1) "Cat the is the on mat." and (2) "The the on cat mat is." That is we disobey rules of English that deal with how words fit together in the formal structure of a sentence. Violation of purely semantic rules would yield sentences like (3) "I am reading a book I hope to write someday." and (4) "Those two fish in that aquarium will be born

tomorrow." As these two examples illustrate, violation of semantic rules involves what may commonly be called "misuse of the meanings of words". It is unclear how the above sentences which violate purely syntactic rules could ever be meaningful with our present understanding of English syntax. However, one can possibly imagine situations where the examples of violations of purely semantic rules could yield acceptable sentences. That is, the pragmatics of a particular situation could make it possible to use such sentences in a meaningful way. Here again, the inseparability of syntax, semantics, and pragmatics is evident. For example, in the second example of violation of purely semantic rules, one could imagine situations where the utterance would be appropriate. Such circumstances could involve a new scientific process whereby fish were treated immediately upon hatching but before they were viable by injecting them with a chemical which stopped their life functions for twenty-four hours. During the same day that the fish had been treated, one could perhaps appropriately say to a visitor: "Those two fish in that aquarium will be born tomorrow."

Furthermore, although we mentioned earlier that by completely jumbling the word order and thereby destroying any syntactic structure acceptable to a speaker of English we created strings of words uninterpretable under any circumstances, G. Lakoff (1971) has found examples of sentences which follow syntactic rules which can be formalized only in a system including some "extralinguistic" knowledge of the real world. The deletion of "will" in the following sentences is to be explained in terms of a rule which allows deletion of "will" only if it is presupposed that the event is one that the speaker can be sure of (Lakoff (1971), p. 339):

1. a) I get my paycheck tomorrow.
   b) I get a cold tomorrow. (This is syntactically unacceptable and involves the illegal deletion of "will" from the correct sentence "I will get a cold tomorrows" The deletion is illegal because one cannot be certain that such an event will transpire.)

As we can see, our attempts at separating syntax, semantics, and pragmatics never really got very far. The numerous problems we encountered provide us with evidence which indicates that such an attempt at separation is for conceptual purposes only and is seldom to be found in the real world. The problems we have encountered in such an attempt provide evidence that the effects of differences in the speaker-hearer matrix must be examined if we are really to begin to understand language and its use.

Modality has long been a thorny problem for linguists. Jesperson (1965) dealt with the problem early in the twentieth century and derived some of his ideas from such philosophers as Wolff and Kant. He saw modality as a "strictly notional" idea rather than an overt grammatical function. Calbert (1971) feels that there is a basic semantic system of modality which is represented in varying ways in different languages. As Lyons (1968) points out, modality is expressed in many ways in English besides in the so-called "modal auxiliaries". However, in an effort to create some bounds for our area of study, we have limited our investigation to the modal auxiliaries "will", "shall", "should", "must", "may", "can", "might", "could", "need" and "would" and the periphrastic forms of some -- "ought to" for "should", "have to" (or "got to") for "must", and "be able" for "can". Of course these verbs cover a large area of meaning, but a basic aspect of the meaning of all modals involves the speaker's attitude toward a statement. R. Lakoff (1972, pp. 243-244) has noted:

> ...the choice of modals, root and epistemic, is based partly on what might be called pragmatic grounds : that real-world situations and social and other contextual assumptions must be brought into consideration, even when we are thinking in terms of classical syntactic and semantic rules, if we are to determine the correct and appropriate use of modals in English, and if we are to account in some general way for the often-peculiar behavior of modals, in English and universally.

As Table 3 indicates, only for "will" and "may" did teachers show significant differences in use. Here, as is the case in other categories, no grade-level effect was evidenced. Rather the differences arose between the frequency of use in the classroom as opposed to the frequency of use in the interview. In both cases the difference is significant at the .01 level of probability.

One may ask why these were the only two (of ten possible) modals to be found to be used differently. Our subjective impression was that additional differences in the use and understanding of other modals would have shown up if we had been able to use additional data collection procedures. This is based on the fact that our corpus of data was limited.

We shall now examine the meaning of the modals "will" and "may" according to recent analyses in linguistics and language philosophy. People who have examined the function of "will" (e.g. Boyd and Thorne (1969), Ehrman (1966), R. Lakoff (1972)) largely agree that the basic notion involved is that of prediction. It is important to separate this attitudinal aspect of the meaning from the notion of tense. One can use "will" as an indication of prediction without involving future tense. (e.g. "She will be outside right now.") R. Lakoff (1972) points out that one can furthermore predict with varying degrees of confidence. For example, if a speaker is virtually positive of his prediction, he can make a statement without the use of "will" (e.g. "He goes to New York tomorrow.") The deletion of "will" here may be seen to be based

on the idea that the speaker is so certain of his prediction, it is unnecessary to use any marker indicating his attitudinal stance such as the modal "will". If the speaker is relatively uncertain of the validity of his prediction, he may use a weaker form of modal such as "may" (e.g. "He may go to New York tomorrow.") This is only one of the uses of "may" which we shall examine presently.

In the actual classroom use of "will", two main trends arise. First of all, "will" was often used in connection with declarative sentences: (5) "The tadpoles will grow legs in a few weeks." This use indicates that the teacher is making a prediction which she feels has a high probability of being fulfilled. Secondly, "will" was often used in questions, (6) "Will you get that pencil for me?" Such questions may be seen as polite forms of demands (i.e. "Get that pencil for me.") Here again, we may delineate a rough scale from a strong demand ("Get that pencil for me.") to a relatively mild request ("Could you get that pencil for me?") with the request using "will" ("Will you get that pencil for me?") somewhere in between the two poles. How this attitudinal aspect works in questions or requests (6) is not as clear to us as how it works in declarative sentences (5). Basically, we see roughly the same continuum of force being expressed in questions using modals as in declarative sentences using modals. That is, "Will you get that?" is a stronger request with a higher chance of being fulfilled than "Could you get that?" just as a declarative sentence using "will" ("Mary will arrive tomorrow") is a stronger prediction than one using "could". ("Mary could arrive tomorrow.").

One of the most productive ways to analyze the meaning of modals is to examine their connection with the illocutionary force of a sentence. Boyd and Thorne (1969) have undertaken just such an analysis. Their speech act analysis arrives at basically the same conclusion as that

of other people - "will" involves prediction. Their analysis breaks a sentence down into two sentential elements; one element carries the illocutionary force of the sentence and the other carries its propositional content. Basically, this means that a sentence containing "will" (e.g. the declarative sentence "He will like that show.") is actually the surface manifestation of a deeper abstract sentence "I predict to you that he likes the show." Such an analysis may seem to be an unnecessary obfuscation of such a simple thing as the analysis of a little word like "will", but the theoretical foundations on which Boyd and Thorne's analysis is based lend support to this approach upon closer examination.

In order for us to see how this all fits together, we will need to examine some of these theoretical foundations. Boyd and Thorne's semantic analysis of modals is based on speech act philosophy which was founded primarily by J. L. Austin and first formulated in his book How to Do Things with Words (1962). Austin pointed out in order to understand language one must understand the acts a speaker performs when saying something. The most clear-cut examples of such acts are what may be called explicit speech acts. For example, to say: "I promise to go to your party." is in itself to perform the act of promising. Other examples of explicit speech acts are:

1. (a) I christen this ship the U.S.S. Spiro.
   (b) I command you to leave.
   (c) I hereby assert that the house no longer exists.

Austin went on to say that all our utterances involve speech acts although most are normally not explicit. For example, by saying "The cat is on the mat." performs the speech act of asserting and may be more formally stated as "I hereby assert to you that the cat is on the mat." Such an analysis of a declarative sentence may at first appear to be making something out of nothing but people such as Ross (1970) have cited

several forms of syntactic evidence to support the existence of a higher sentence in a form something like "I hereby assert to you that...". The force of the speaker's intention in performing such an act has been labelled the 'illocutionary force' of such an utterance. Austin talks of the essence of illocutionary force by saying it is the performance of an act in saying something as opposed to the performance of an act of saying something. The performance of an illocutionary act may or may not mean anything to the listener. That is, the speaker may not induce uptake of the illocutionary force of an utterance. No effect on his audience may be achieved by performing an illocutionary act.

If we analyze an explicit performative like "I christen this ship the U.S.S. Spiro." we see that its truth functional analysis is not immediately available. That is, we cannot simply label the utterance as true or false as we can the proposition "The earth is flat." Rather, for the explicit performative we have to analyze a set of conditions involving the speaker, his audience, and the surrounding conditions. Such factors are often assigned to pragmatics. When problems with the creation or uptake of illocutionary force arise, Austin points out we should not label the utterance false; rather unhappy is a better term. It is not true or false. Rather something interfered with the christening or asserting in the first place. The performative may not function in a 'happy' way for one of two basic reasons - it may 'misfire' or the act may originally be carried through, but the speaker may be 'infelicitous' and cause it to fail subsequently. Here, we shall be primarily concerned with misfires. One of the conditions to prevent a misfire according to Austin (1962 , p. 15) is:

> the particular persons and circumstances in a given case must be appropriate for the invocation of the particular procedure involved.

With all this in mind, we can now return to teachers' use of modal verbs. As we stated before, prediction is an essential element in the illocutionary force of the word "will" when used in declarative sentences. Remember that this is a relatively strong form of prediction as opposed to the weaker form involved in the epistemic use of "may" (as in "He may go to New York."). If we examine the pragmatic requirements of making strong predictions, we see that the elementary school teacher occupies a role which qualifies her for making them. That is, in the elementary grades a teacher's role is at least partly defined in terms of conveying information to her students. She is normally recognized as the person who "know the most" and is expected to share her knowledge with her students. Obviously this is not the only aspect of her role, but it is a prominent one. The teacher is the one who is in a position to, and is expected to make relatively high confidence predictions. This expectation is found only in the presence of listeners who are children though, because in that situation the teacher makes predictions which provide new information to the children. The teacher could make the same utterances involving the same propositional contenct and illocutionary potential (as Boyd and Thorne would say) in the presence of adults, but they would be trivial. That is, they would cover information which the teacher would normally expect the adult listener to possess already. As we mentioned earlier, "will" is often used in questions as well as in making high-confidence predictions; however in the case of questions, "will" performs the job of making a straightforward and blunt command into a more polite request. Here again one must recognize that "will" is

a relatively strong form of request (as opposed to "could you get me that pencil?"). This use of "will" also is to be expected given an analysis of the role structure in the classroom. That is, teachers are normally expected to display a reasonable degree of courtesy when dealing with their students, but they also are recognized as filling a role which carried "command power" with it. The teacher's role structure includes the authority to make strong-form requests.

Not if we turn to the analysis of "may", we see that the same theoretical framework is useful. "May" is generally analyzed into two basic senses - root and epistemic. The epistemic sense deals with possibility or a weak form of prediction as in (8) "He may go to New York." meaning it is possible that he will go to New York. The root sense of the word involves the granting of permission as in (9) "You may go now." The root sense is our primary concern here since almost all the uses of "may" in the classroom were permission-granting uses. As is to be expected, the interview segments of speech involved a higher proportion of epistemic sense uses of "may" and practically no permission-granting uses. This qualitative difference as well as the difference in absolute frequency of use of the word are again indicators of the different roles the teachers felt they fulfilled in the two situations (i.e. speaking to young students vs. speaking to an adult interviewer.)

The teachers failed to use any of the remaining modal verbs with differing frequencies in the classroom and in the interview. A brief analysis of these modals provides theoretical explanation for this empirical finding. The only other word to approach a significant difference was "would". This is to be expected in that it is sometimes used in polite commands (as in "Would you bring me that pencil?")

"Might" is generally used like epistemic "may" - in low-confidence predictions. The teacher's role need not involve a great deal of low-level prediction because she generally is thoroughly familiar with curriculum materials and can make relatively high-confidence predictions. It is to be expected that she knows things her students do not. The fact remains, however, that our subject teachers did not teach strictly "by the book". Rather, there often was free interchange between teacher and student involving material about which the teacher could not be so certain. In those cases, "might" could be expected to be used in the classroom. In general it was used infrequently in both situations.

One would perhaps suspect that "should" is a modal that is used more frequently by teachers in the classroom than in the interview situation. This was not corroborated by our empirical results. An analysis of the meaning of "should" belies the hypothesis as well. This theoretical explanation is based on differences in the uses of "should" which easily escapes one's attention in a less rigorous analysis. As Boyd and Thorne point out, the use of "should" involves an illocutionary potential of someone or something making a demand. The party or entity making the demand may be from a generally accepted set of candidates like moral law which makes the use of "should" into a 'moral injunction'. Similarly, the entity making the demand may be natural law, custom, or probability. When moral law is involved, the implication is that to fail to perform something one 'should' do is to disobey some rule(s) established by humans for good moral conduct. To use "should" when it is based on natural law or probability is again to become involved with prediction (although of a lower confidence-level than with "will"). For example, by saying "The sun should rise soon." one invokes an illocutionary force of prediction based on one's perception of natural events. What we found in the trans-

cripts was that teachers tended to use "should" most often in the sense in which it was based on custom. Very few occurrences of clear 'moral injunction' were used, although it is often very difficult to differentiate this from the use of "should" based on custom.

The difference that we did find was in the party toward which the demand was directed. In classroom interaction, teachers used "you" in most statements including "should". This could be directly (e.g. "You should color that red.") or indirectly (e.g. "Your paper should be on my desk by now."). This use of "should" with "you" contrasts sharply with its use in the interview speech where should almost always had a third person subject (e.g. "They should be reading well by now.") What this indicates is that in the classroom, the teachers were much more willing to make their "should demands" on their interlocutors (i.e. the students), whereas in the interview situations, the teachers were much more vague about this (e.g. "It shouldn't be that way") or placed the fulfillment of the demand on the shoulders of some nonpresent party (e.g. "They should be reading well by now.") In general, the extensive use of one sense (i.e. demand directed toward interlocutor) of "should" in the classroom and of the other sense (i.e. demand directed toward some third party) in the interview seemed to be the primary factor involved in preventing a difference in frequency of use of the word between the two conditions. That is, the pragmatics of each of the two roles the teachers fulfilled allowed the use of "should", although in one role the use of one sense of "should" prevailed, and the use of the other sense was predominant in the other role. In general, the item was used rarely.

As Boyd and Thorne point out "must" is usually ambiguous. However, their analysis of ambiguity of the modal involves its use in single, isolated sentences such as "They must be married." In such a sentence "must" can mean the speaker is making a demand or command of some sort

in which case the illocutionary potential includes elements of an imperative nature and of necessity. It could be paraphrased in deep structure as "I command to you that it be necessary that they be married." The other meaning of "must" involves elements of a statement and necessity in the illocutionary potential sentential element. We can interpret "They must be married." to mean that the speaker has made a statement that appears to him to be necessarily true. He is not making a demand in this case, rather he is making a statement of whose truth he has little doubt. There was very little use of the sense of "must" involving necessity by the teachers in either situation. Rather, it was used (quite extensively) in both the interaction and the interview situations in making demands of some sort.

Here, as in the case of "should", we found a difference between conditions in the party to whom the illocutionary act was directed. In the interview situation, "must" was always used in sentences with a third-person subject (e.g. "They must get over that." or "They have to get over that.")* In the classroom interaction speech, we found that "must" - or one of its periphrastic forms was usually used in sentences involving third-person subjects, but was used with second-person subjects as well (e.g. "You have to try harder."). As in the case of "should", the object of the illocutionary force (interlocutor or some third party) is the interesting part of the analysis rather than simply the frequency of the item.

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* We included the dialectic variants "have to" and "got to" as well as the actual occurrence of "must" in our analysis.

As was the case with "may", "can" has a root sense and an epistemic sense. Although there are differences between the epistemic senses of "may" and "can", they are not of a critical nature for our analysis. Boyd and Thorne's analysis of "can" finds it to be a modal verb only when it is used as a paraphrase of "may" - that is only when it is used to grant permission as in (10) "You can go now." or to state a possibility as in (11) "It can be hectic in here."*

The teachers in our sample used "can" in giving permission relatively seldom (and, of course, only in the classroom). They used "can" to indicate possibility (e.g. "It can be hectic,") relatively seldom as well and then usually in the interview situation.

Besides the two uses of "can" which are paraphrases of "may", Boyd and Thorne cite several nonmodal uses of "can". The one nonmodal use with which we shall be concerned is that paraphrasable by "be able" as in (12) "You know you can (or are able to) do that." Even though this is not considered to be a use of modal "can" by Boyd and Thorne, its use is interesting to us because it reveals some factors of the attitudinal make-up of the teachers. By considering this use of "can" to be nonmodal, Boyd and Thorne are saying no illocutionary potential derives from it. The majority of the uses of "can" were like (12), paraphrasable as "be able". "Can" was used very often in this sense. Teachers often used

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* It is important to remember here that we are not assessing the correctness of speech; rather we are interested in how words are actually used. Therefore, even though some people insist that the use of "can" to grant permission is improper, we are not concerned with such prescriptive linguistics. It is perfectly grammatical to us in that English speakers and listeners have no trouble understanding its meaning when used in a sentence like "You can go now." Such a sentence is not ungrammatical in the sense that "You go can now." is. We are not condemning or condoning judgments in prescriptive linguistics. Rather, they are not our concern here.

"can" and "be able to" to encourage their students in the classroom and to describe their abilities to the interviewer. Although there was no difference between conditions in the frequency of this usage, the frequent use of "can" and "be able" points out one of the important attitudes these teachers seemed to share. They were constantly involved in urging their students to progress in their studies by providing supportive assistance to them. In the interview, the use of "can" or "be able" was used in the description of students' abilities. Sometimes, "can" or "be able" was also used to make statements about students' abilities which were not revealed in their performance (e.g. "He can do that when he tries.") "Can" was also used quite extensively in forming questions in classroom interaction speech. Although such questions may technically be classified as 'yes-no' questions (e.g. "Can you do this?"), the teachers seldom were looking for such a simple answer. Rather, the use of "can" in such a question usually conveyed a request to attempt a task or problem as well as a request for an answer (which was, by the way, usually expected to be affirmative).

As mentioned earlier, we found no significant difference in usage of "could" between the classroom and interview situations. "Could" is considered by Boyd and Thorne to be a surface structure variant of "may" in most cases. Upon analysis of our transcripts, their formulation seemed to be essentially correct. An example of this would be (13) "It could be cold out there." Here, as we saw in the case of "may", "could" acts as a low-confidence prediction. An explicit form of conveying such a speech act would be "I predict to you that there is a possibility that it is cold out there." Again, this can be contrasted with a high-confidence prediction "It will be cold out there." - and with

the highest level of predictive confidence which includes no modal (i.e. "It is cold out there.") A second use of "could" by the teachers involved the illocutionary act of suggesting as in (14) "You could put that piece (of the puzzle) in that place." Here the explicit speech act would be something like "I suggest to you that you put that piece in that place."

The third use of "could" was related to this suggestive-type illocutionary force. This third use was in questions which began with "could" as in (15) "Could you get me that?" Here as in the case of "will", we seem to have an interesting connection between a question and the parallel statement using the same modal ("You could get me that.")

It has been noted for some time now that the question and the statement are related syntactically. For example, Jacobs and Rosenbaum (1968) call the interrogative transformation the syntactic operation whereby one forms a yes-no question by moving the quxiliary to the beginning of the string. However, we would like to point out additional similarities between a statement including a modal and a question beginning with the same modal. We recall that "will" involves high-confidence prediction when used in a statement (e.g. "He will go to New York.") Now, notice that, when used in a question ("Will he go to New York?"), the speaker seems to expect a high-confidence prediction from the listener. When one sense of "could" (i.e. possibility) is used in a statement, the speaker is asking a lower-confidence prediction (e.g. "He could go to New York tomorrow.") When a speaker uses "could" in a parallel question ("Could he go to New York tomorrow?") he is asking for no more than a low-confidence prediction from the listener. That is, both "could" and "will" (and probably "can", "might", "would", "may" and "must") involve levels

of confidence which remain in the same continuum when the modals are used in syntactically different ways (of course using only one sense of the modal).

"Need" was the remaining item analyzed in the class of modals. Again, its usage was not different in the classroom and in the interview situation. It is included in the list of modals by some investigators and deleted by others because it is not entirely clear whether it functions as a modal in any sense. For instance, Ross (1969) points out that "need" may perform some of the duties of a modal only in 'negative contexts' which he feels are not entirely clear. In contexts which are not negative, Ross analyzes the word as having another function and sense. The inclusion of it in investigation was designed to allow us to shed more light on its meaning. However, its infrequent and sporadic use as well as the confusion surrounding its true nature and meaning prevented us from making any useful analysis of it. Further data in different and more varied situations are needed to reach conclusions on this matter.

Our analysis of modals seems to have provided at least a few interesting insights into the nature of classroom attitudes as well as into the meanings of modals themselves. We have not arrived at any final and definite answers, but our investigation has taken a new approach which may hopefully be profitably extended in the future. Our analysis of the differences in frequency of use of "will" and "may" between classroom interaction and adult interview is based on <u>how</u> and <u>why</u> the words were used rather than the simple fact that they were used at all. Moreover, we have grounded our analysis within an already established theoretical framework - that of speech act philosophy. Through the use of this theory, we have been able to explain our findings on a principled

basis. Speech act philosophy is not as widely accepted as some other procedures used in social science research, but for this reason the analyses offered here may provide particularly interesting new insights and discoveries.

We feel that one comment on our data-gathering approach is appropriate here. As we mentioned earlier, we chose naturalistic data gathering for several reasons. While extolling the virtues of such reasons, however, one must recognize the inherent limitations imposed by them as well. The main limitation involves the fact that one has little opportunity to test specific hypotheses under conrolled conditions. In our investigation, we feel that "would" did not appear to be used differently in the two conditions because of such data limitations rather than because of theoretical inadequacies. While we recognize that it is not a usual practice to explain results which do not appear, in the case of "would", the difference was in the expected direction, and had we chosen segments of speech for analysis on the basis of the use of "would" rather than on a random temporal basis, we feel our theoretical predictions would have been fulfilled by the data.

It seems that one of the most profitable ways to examine the meaning of our findings is to delineate the assumptions and preconditions underlying a teacher's willingness to perform the type of speech acts we have found. For example, to make high-confidence predictions through the use of "will" says something about how a teacher views her role and responsibilities in the classroom. Also, to see oneself as in a position to grant permission involves views of one's roles. Such language use may be capable of providing subtle evidence of how teachers view themselves.

"Even", "Only", "Just" and "Still"

Our analyses of "even", "only", "still", and "just" are based on various theoretical foundations from so-called ordinary language philosophy and modern linguistic study. There words involve some rather complex meanings and are labelled 'underdetermined elements' by Feldman and Hass (1972). Underdetermined elements are words or phrases which convey relatively complex meaning and depend on the speaker-hearer matrix circumstances for their full understanding. For example, to say "Even he is finished." is to make an utterance involving information supposedly shared by the speaker and hearer. That is, the addition of "even" to "He is finished." involves some additional information which must be shared by the speaker and hearer if the complete meaning of the utterance is to be conveyed. Although sentences containing underdetermined elements can probably be paraphrased into lengthy sentences devoid of them, the full force of the meaning is somehow lost. The most natural paraphrases contain other underdetermined elements, and even then the meaning is some how now the same. For example, one could paraphrase "Even he is finished." as "He is finished, but I did not expect him to be although other people are finished." This sentence itself probably contains underdetermined elements (e.g. although, but). It usually is very difficult to paraphrase a sentence containing underdetermined elements without using other such elements in the paraphrase. Furthermore, by using a lengthy paraphrase of a sentence including underdetermined elements, the original, often subtle, meaning is not conveyed.

We examined the four items listed above because the difference in pragmatic aspects of communication between classroom interaction and the interview situation will include differences in the assumptions about the knowledge shared by the speaker and hearer. It is also plausible to

hypothesize that young children will simply not be able to handle the concept of prior shared knowledge between the speaker and listener and will therefore be unable to understand the full meaning of sentences including these elements used by the teacher. Such a lack in ability was found in an experiment conducted by Feldman (1971) in five-year-olds but not in eight-year-olds. The experimental results indicated that five-year-olds are incapable of utilizing at least one aspect of the adult meaning system in English, whereas, by the age of eight, subjects had developed this capacity.

If we closely examine one element, say "even", we will see there are four general possibilities one may witness in the teachers' use and the students' understanding of the element in the classroom. The teacher may not use the element and the children of her class's age may not be able to understand its meaning. A second possibility is that the teacher may not use the element, but the children in her class possess the ability to understand the element. The remaining two possibilities involve instances where the teacher does use the element, and the children either may or may not be able to understand the meaning to be conveyed by the element. Within these four possibilities, we have two in which teacher speech matches student capacities for understanding and two mismatches.

In the case of the mismatches, there are two readily possible explanations. First, the teacher may have misperceived the abilities of her students in this area and could base her speech on either an underestimation or overestimation of such abilities. Secondly, the teacher could have correctly perceived her students' meaning processing ability, but she may have some other reason for 'mismatching' them with her speech. As

we saw in the case of modal auxiliaries, there may be specific reasons (e.g. attitudes toward the interlocutor(s) in specific circumstances) for not using items carrying relatively complex meaning.

If the teacher, fails to use elements in the classroom because she has incorrectly understimated her students' ability to utilize them, her speech would be unnecessarily devoid of meaning structures. The classroom would be a place where elements which the students are capable of using are lacking in the teacher's language. If the teacher uses an element because she has correctly perceived her students' ability to use it successfully, the case is similar to the situation we found in the interviews wherein teachers utilized an adult meaning system which relied on shared knowledge in various forms. The teacher may also overestimate the abilities of children in her class and use an element in her speech even though the students do not possess the abilities needed to fully interpret its meaning. This may be seen as a case of''oversatiation' in meaning. The teacher would be talking 'over their heads'.

One can sometimes witness an intentional variant of this possibility in teacher speech when two or more adults are in a classroom. In such situations, one of the adults sometimes make a comment directed solely at the other adult and phrases the utterance in such a manner that the children, even though they hear the utterance, will miss the meaning aimed at the other adult. Such utterances often do not rely on esoteric or complicated vocabulary items for their special effect but rather on assumptions or presuppositions shared only by the adults in the classroom. For example, a child could ask a question about the responsibilities of some governmental agency, and the teacher could answer "They're "supposed" to protect us." (item in quotation marks is stressed) In a classroom of young chil-

dren, the exmphasis on "supposed" is probably meaningful to the other adult in the classroom only, and the children will not catch the caustic or humorous 'note' in the teacher's utterance. Such a special effect is often carried only in the speaker-hearer matrix composed of two adults. In such a case, the teacher has purposefully used an adult meaning system in curcumstances where she recognizes the students will be unable to decode the full meaning of the utterance.

As we shall see in the cases of "even" and "just", teachers may also reduce the usage of complex meaning elements for children (as opposed to an adult in an interview) when those children should theoretically be capable of understanding the meaning of such elements. This seems to have occurred with "even" and "just" since teachers of fourth and fifth grade children used these elements less in classrooms than in interviews with an adult. As we outlined earlier, there are two possible explanations for this reduction. First of all, the teachers may have misperceived and underjudged the ability of their students to understand the meaning of such elements. Secondly, the teachers may correctly recognize the students' capacity to understand the elements, but there may be some other reason (e.g. role structure variables) which reduce their use. We shall return to this issue after examining the meanings of "even", "only", "still", and "just".

"Even" has been a word whose behavior and meaning have been difficult to explain. Linguists such as Kuroda (1965), Fraser (1971), and Horn (1969) have dealt with the problem, but have all pointed out that much remains to be explained. This item is often analyzed in conjunction with "only" since the two have interesting relationships. Our analysis here will proceed on such a basis. Such an approach will provide us with one possible

explanation for the difference in usage for "even" (used more frequently in interview than in classroom interaction) and the lack of such a difference in the use of "only". By following Fraser's (1971) approach to the analysis of a sentence containing "even", we can break its meaning down into three general parts - a) the main assertion of the sentence b) a presuppositional component, and c) an implication. If we examine the sentence (16) "Even John does backflips." we see that there is a basic assertion indicating that John does backflips. In our sample sentence, the presuppositional component involves the fact that people other than John do backflips. The presuppositional element is evident if we try to use "even" and simultaneously deny its presupposition. For example, the sentence "Even John does backflips, but nobody else does." involves a contradiction and fails to make sense because of this.* The implication involved in the sentence "Even John does backflips." deals with the fact that the use of "even" here creates the impression that the speaker would not expect, or would not expect the hearer to expect, John to do backflips. This analysis reveals the complex nature of the meaning of "even".

An examination of "only" reveals some interesting facts about its meaning which may be contrasted with that of "even". Basically, as Horn (1969) points out, "only" presupposes what "even" asserts and asserts the negation of what "even" presupposes. This becomes much clearer if we return to a new, but related, sample sentence: (17) "Only John does backflips." and compare it with our original sample sentence (16) "Even John does

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* (Notice, incidentally, that in our example, "even" governs (in a semantic sense) the subject (John). If we change the scope (i.e. what it governs), its presupposition is also changed. It is all right to say "John even does backflips, but nobody else does." since the presupposition and its denial are not in the same sentence. However, in this sentence we cannot deny its proper presupposition by saying "John even does backflips, but he doesn't do anything else." and still hope to make sense.)

backflips." In(17), the assertion (i.e. No one else does backflips.) is the negation of the presupposition of (16)(i.e. Someone other than John does backflips.) Furthermore, in (17) the presupposition (i.e. John does backflips.) is equivalent to the assertion of (16)(i.e. John does backflips).

So far, our analysis has pointed out how the presupposition and assertion components of the meaning of "even" have related counterparts in the meaning of "only". However, as we noted before, "even" includes an implication as well. This implication involves the expectations of the speaker or the speaker's assessment of the listener's expectations and deals with the fact that the assertion made in the sentence involving "even" is counter to normal expectation. That is, to say "Even the train is late," is to imply that the train is not usually late. A close examination of the meaning of "only" reveals that it includes no implication. We have accounted for all aspects of the meaning of "only" by using assertion and presupposition alone. To say "Only the train is late." is to assert that nothing but the train is late and to presuppose that the train actually is late. It says nothing about anyone's normal expectations regarding the usual punctuality of the train.

The fact that "even" involves three components of meaning whereas "only" involves only two of these three provides the basis of a plausible explanation of why "even" was used more in the adult-adult speaker-hearer matrix than in the adult-child speaker-hearer matrix whereas "only" was not used differently. Again, we must return to the matter of pragmatics since our explanation in this case once more involves the speaker's assessment of the hearers' ability to understand and the speaker's assessment of the roles involved in particular speaker-hearer matrices. It is possible to hypothesize two general explanations for this difference in use. First

of all, the speakers (teachers in our case) may have correctly assessed their hearers' abilities and found that students of their class's age are incapable of handling the three pieces of information. Of course this information processing limitation hypothesis on the part of the teachers would not be manifested in a conscious decision by the teacher. Rather, her use or lack of use of the elements would result from a fairly extensive but unconscious, decision process involving feedback from the students. That is, teachers have ample opportunity to observe whether certain aspects of communication are understood or not by children. Although it is often difficult for teachers to put such intuition about student abilities into a concise formulation, we can sometimes discover the processes which are occurring and their governing principles by observing exactly how teachers act. In certain instances their behavior towards children may even provide more accurate measures of the children's abilities than direct measurement techniques. This hypothesis, in the case of "even", however, seems unlikely since Feldman's (1971) data indicates that somewhere between the kindergarten and fifth-grade children develop the ability to understand the meaning of underdetermined elements and we found no corresponding shift in teachers' use of "even". As mentioned before, it is also possible that the teachers were underestimating the true abilities of the children in their classes. This possibility, however, seems less likely than the alternate explanation for this finding.

This second hypothetical explanation of our empirical findings is concerned with the nature of the implication component of the meaning of "even". As pointed out earlier, the meaning of "only" involves no such component. The teachers may have differentiated their use of "even", but not of "only", because the use of implication is governed by variables

in the role structure of the participants in the speaker-hearer matrix. In the meanings of both "even" and "only", assertion and presupposition are involved. The teachers obviously must perform the act of assertion if they are to make any statements, and presupposition is also a relatively ubiquitous tool in much of our language. These two components may be seen as being 'nonevaluative' in the sense that they need not rely heavily on the attitudes of the speaker or hearer. In the case of implication, however, (at least in the instance of "even") attitudinal factors come into play. We saw that the implication component of the meaning of "even" involved the speaker's expectations or his perception of the expectations of the listener. This special nature of the implication component may be responsible for the teachers' relative reluctance to use a word which involves implication.

We have suggested two general hypothetical explanations of our findings, namely a) Teachers may use "even" less in the classroom than in the interview because they perceive (either correctly or incorrectly) a limitation in the information-processing capacity in children, and b) Teachers tend to use "even" but not "only" more frequently in the interview than the interaction situation because "even" contains attitudinal factors in its implication component of meaning. Notice that any argument must recognize the fact that "even" was used in the classroom; it was simply used more in the interview situation. By no means did it drop out of teachers' speech completely in the classroom. The hypothesis based on the implication inherent in "even" but not in "only" seems to be the more plausible one at present, based on our prior analysis of modal verbs. In that analysis we found that differences in uses of modals could be explained largely in terms of the role structures and

role expectations of the speakers and hearers. In the case of "even" teachers may be unwilling to make implications (which involve attitudes and expectations) in the classroom because they feel their job should be more concerned with conveying factual information. Obviously this is but one interpretation of our empirical findings. Further research of different types of speaker-hearer matrices in different conditions is needed to further delineate the factors involved.here.

We included "still" in our analysis becuase it often seems to function as an underdetermined element. In the sentence "John still works hard.", "still" is involved in stating that John is now participating in an activity which the speaker and hearer knew John participated in at some previous time. They must share this knowledge of previous events if the use of "still" is to be used properly. This assumption of shared knowledge plays an important role in underdeterminacy. If a speaker made the above statement to someone who did not know John had previously established a reputation for working hard, the listener would probably say something like "I didn't know he had worked hard in the past." If someone asks the infamous question "Do you still beat your wife?", we see that some shared knowledge of previous actions is involved. These two questions indicate that a presuppositional-assertion analysis is in order for "still". To say "John still works hard." is to assert that John works hard now and to presuppose that he has been known to work hard in the past. The presuppositional component of the meaning of "still", unlike that of "even" or "only", seems necessarily to involve shared knowledge on the part of the speaker and hearer of a previous state of affairs. Further research of the meaning and use of "still" is necessary before answering more questions about the ways (if any) that the presuppositional component

of its meaning differs with that of, way, "only". In any case, teachers did not use it significantly less in the classroom than in the interview situation which indicates that a) they did not feel it was too difficult for their students to understand, and/or b) its use did not seem to interfere with the role structure they were trying to create or maintain.

"Just" was the fourth of this group of underdetermined elements. Cohen (1969) has performed a thorough analysis of the meanings of "just" and their various histories. Here, as in previous cases, we found that different senses of the word tended to be used in the two different conditions. In the classroom, teachers tended to use "just" as a synonym for "only" and "precisely". An example of the first case is "Just the girls may go.", and an example of the latter use if "Make it just as tall as the other one." In the adult interview situation, teachers tended to use "just" predominantly in what Cohen calls the 'emphasis' sense. Actually, their use of it in the interview only approximates this emphasis sense. We feel it is more accurately described as a paraphrase of "simply" as in "He "just" fell right off his chair." or "They just forget sometimes; they really know how to do it." When "just" is paraphrasable by "only", it is considered to be an underdetermined element on the same basis as "only". We are not as certain of how the other two senses fit into the overall picture of pragmatics and role structure. Again, further research of its use in different situations may provide insight into this problem.

In addition to the modals and the four other underdetermined elements we have examined so far, it became apparent during our analysis of the transcripts that other items may be playing interesting roles in the meaning structure of teachers' speech in the classroom as opposed to

that in the interview. For example, elements like "really" and "very" appear to be used more in the interview situation than in the classroom. An analysis of these elements which are part of a set of elements which G. Lakoff (1972) calls 'hedges' may be capable of providing additional insights into the meaning structures (and their underlying assumptions) used by teachers. Preliminary analysis also indicates several other trends. For example, "and", "but", and "or" (the so-called logical connectors) seem to be used more in the interview situation than in the classroom. The same holds true for what Urmson (1963) has labelled 'parenthetical verbs' (e.g. "think" and "believe" when used in the first person singular). Such results from these preliminary analyses indicate that further research into the speech of teachers in and out of classroom situations may provide additional insights into the processes that occur in the communication system of both.

As we explained at the beginning of this report, we feel it is necessary to explain the meaning of results of research rather than simply produce the empirical basis on which such an explanation may rest. The explanations we have offered here appear to us to be the best ones presently available and, wherever possible, are based on previously-established theoretical bases rather than ad hoc formulations. We do not claim to have provided the only possible explanation, but the one we have provided seems to be basically capable of providing at least some insight into the nature of our findings. There is little doubt that this can and should be modified as more research provides further clues about the nature of the communication puzzle.

Our results and analyses may be labelled more correctly as suggestive than interpretative. That is, several areas of further research immediately come to mind when we survey our findings here. First of all, investigations

of the language of adult native speakers in other various well-defined roles (e.g. a professor in a classroom) need to be undertaken. Secondly, a better understanding of children's use and comprehension of the various items examined here could be very interesting not only because of the information it would provide about what children can understand at specific ages but also because such investigations often help uncover the makeup of an ability. This latter benefit derives especially from the genetic epistemological tradition espoused so elegantly by Piaget (1970). Hopefully, all these research approaches can aid in uncovering some of the basic factors in the complex process of human communication.

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